therefore $\frac{D}{1+\sqrt{70}} = \frac{60 \text{ rad. earth}}{9.366} = 6.406 \times$ the radius of the earth; and multiplying by 3.67, the ratio of the radius of the earth to that of the moon, d=23.5×radius of the moon, which diminished by one radius of the moon, leaves $22\frac{1}{2}$ times the radius of the moon, or 24310.4 miles for the distance to which a heavy body must be thrown by some internal power of the moon, in order to remain suspended between the moon and earth.

According to the ratio of the quantity of matter in the moon and earth, and the observed rate of falling of a heavy body at the surface of the earth in the first second of time, the rate of falling at the surface of the moon is equal to 3.018 feet. Now, let g=this rate=3.018, s=the distance to which the body must be thrown=24310.4 miles; V=the initial velocity, or the velocity which the body must have at leaving the surface of the moon, then $V=2\sqrt{gs}=39364.3$ feet, or about $7\frac{1}{2}$ miles per second, or more than ten times the velocity of the moon in its orbit. Can we believe that there exists in the moon any internal power, capable of producing this effect? When we consider how small the attraction of gravitation is at the moon, would not the existence of such a projectile force prove in the lapse of ages, destructive to that body? And when centuries, and even thousands of years have passed away without any diminution of its magnitude, are we not irresistibly led to deny that there is in the moon any power of projecting a part of itself beyond the sphere of its own attraction?

No. LIX.

Extract of a letter from a member of the Society, relative to the great cold in January, 1807, at the town of Hallowell, in the district of Maine, Massachusetts, Head of tide-water on Kennebeck River. Communicated by John Vaughan.

Hallowell, January 29, 1807,

THE cold here on the night of the 22d—23d, brought the

thermometer, for a short time, to 33° (Fahrenheit) below the zero; and again, on the 26th—27th, for a much longer time. But the sky, on the last occasion, became cloudy at 3 A. M. and stopped short our career, or I should have frozen quicksilver by a natural process, for the first time in the United States, and for the first time any where in so low a latitude as 44° 16′ by the side of tide waters; that is, at the level of the sea. Quicksilver, by Mr. Hutchins' experiments at Hudson's Bay, as explained by Mr. Cavendish, and confirmed by various others, freezes at—38⅔°; and I had the thermometer at—36° or—37° on the surface of the snow; consequently, had darkness continued without clouds, by day break I should have had my requisite temperature at the surface of the snow, though I did not expect more than—36° in the air. I had prepared diminutive cups of fine writing paper, of a size to hold each a globule of quicksilver; and tools were ready cooled to strike, in order to obtain a proof of malleability.—In all this cold weather our female invalids were riding about the country, and our stages and town patroles (of which in my turn I am one) by night. On the two coldest nights, I sat up with my son, and wore neither hat, nor gloves, nor great coat, nor boots. I observed with three thermometers made by Blunt, the king's instrument-maker in London, a fourth by Jones, and a fifth by an Englishman (who supplies some Italians at Boston) and which proved my third best instrument. At mid-day on the 26th we had a violent wind, with the thermometer 7° below the zero; against which our ladies rode, without inconvenience, in a sleigh; other thermometers in the neighbourhood, including one by Adams, corroborated the above. This winter, till lately, has not differed from any common cold winter in Europe.